

LLL		BBBBBBBBBBBB	RRRRRRRRRR	AAAAAAA	RRRRRRRRRR
LLL		BBBBBBBBBBBB	RRRRRRRRRR	AAAAAAA	RRRRRRRRRR
LLL		BBBBBBBBBBBB	RRRRRRRRRR	AAAAAAA	RRRRRRRRRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLL		BBB RRR	RRR AAA	AAA RRR	RRR
LLLLLLLLLLLL		BBBBBBBBBBBB	RRR AAA	AAA RRR	RRR
LLLLLLLLLLLL		BBBBBBBBBBBB	RRR AAA	AAA RRR	RRR
LLLLLLLLLLLL		BBBBBBBBBBBB	RRR AAA	AAA RRR	RRR

FILEID**SUBS

F 7

The diagram illustrates three sets of binary digits (0s and 1s) arranged in a triangular pattern:

- Set 1 (Left):** Consists of 11 'L' characters, representing binary 0s.
- Set 2 (Middle):** Consists of 11 'I' characters, representing binary 1s.
- Set 3 (Right):** Consists of 11 'S' characters, representing binary 1s.

```
1 0001 0 MODULE LIB_SUBS (
2 0002 0           LANGUAGE (BLISS32),
3 0003 0           IDENT = 'V04-000'
4 0004 0           ) =
5 0005 1 BEGIN
6 0006 1
7 0007 1 !
8 0008 1 ****
9 0009 1 !
10 0010 1 !* COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
11 0011 1 !* DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
12 0012 1 !* ALL RIGHTS RESERVED.
13 0013 1 !
14 0014 1 !* THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED
15 0015 1 !* ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH THE
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17 0017 1 !* COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY
18 0018 1 !* OTHER PERSON. NO TITLE TO AND OWNERSHIP OF THE SOFTWARE IS HEREBY
19 0019 1 !* TRANSFERRED.
20 0020 1 !
21 0021 1 !* THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
22 0022 1 !* AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
23 0023 1 !* CORPORATION.
24 0024 1 !
25 0025 1 !* DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
26 0026 1 !* SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
27 0027 1 !
28 0028 1 !
29 0029 1 ****
30 0030 1
31 0031 1 !**
32 0032 1
33 0033 1 !* FACILITY: Library command processor
34 0034 1
35 0035 1 !* ABSTRACT:
36 0036 1
37 0037 1 !* The VAX/VMS Librarian is invoked by DCL to process the LIBRARY
38 0038 1 !* command. It utilizes the librarian procedure set to perform
39 0039 1 !* the actual modifications to the library.
40 0040 1
41 0041 1 !* ENVIRONMENT:
42 0042 1
43 0043 1 !* VAX native, user mode.
44 0044 1
45 0045 1 --
46 0046 1
47 0047 1
48 0048 1 !* AUTHOR: Benn Schreiber.      CREATION DATE: 21-June-1979
49 0049 1
50 0050 1 !* MODIFIED BY:
51 0051 1
52 0052 1 !* V01.01      Benn Schreiber      8-Nov-1979
53 0053 1 !* Add routine getfilnamdesc
54 0054 1 --
55 0055 1
56 0056 1
```

```
: 58      0057 1 LIBRARY
: 59      0058 1           'SYSSLIBRARY:STARLET';
: 60      0059 1 REQUIRE   'PREFIX';
: 61      0060 1           'PREFIX';
: 62      0244 1
: 63      0245 1 EXTERNAL ROUTINE
: 64      0246 1           lib$get_vm : ADDRESSING_MODE (GENERAL); !Allocate virtual memory
: 65      0247 1           lib$free_vm : ADDRESSING_MODE (GENERAL); !Deallocate virtual memory
```

Mod

LIE

LIE

LIE

LIE

OTS

```
67      0248 1 GLOBAL ROUTINE lib_get_mem (bytes, retadr) =  
68      0249 1  
69      0250 1 | allocate virtual memory  
70      0251 1  
71      0252 1 libSget_vm (bytes, .retadr);
```

```
.TITLE LIB SUBS
.IDENT \V04-0001

.EXTRN LIB$GET_VMX, LIB$FREE_VMX

.PSECT $CODE$, NOWRT, 2

.ENTRY LIB$GET_MEMORY, Save nothing
PUSHL RET$ADR
PUSHAB BYTES
CALLS #2, LIB$GET_VMX
RET
```

; Routine Size: 16 bytes, Routine Base: \$CODE\$ + 0000

```
72      0253 1 GLOBAL ROUTINE lib_free_mem (bytes, address) =  
73      0254 1  
74      0255 1 | deallocate virtual memory  
75      0256 1  
76      0257 1 lib$free_vm (bytes, address);
```

```
.ENTRY LIB_FREE_MEM, Save nothing
PUSHAB ADDRESS
PUSHAB BYTES
CALLS #2, LIB$FREE_VM
RET
```

; Routine Size: 16 bytes, Routine Base: \$CODE\$ + 0010

```
77      0258 1 GLOBAL ROUTINE lib_get_zmem (bytes, retadr) =
78      0259 2 BEGIN
79      0260 2 !
80      0261 2 ! Get zeroed memory
81      0262 2 !
82      0263 2 perform (lib_get_mem (.bytes, .retadr));
83      0264 2 CHSFIJL (0, .bytes, ..retadr);
84      0265 2 RETURN true
85      0266 1 END:
```

.ENTRY LIB_GET_ZMEM, Save R2,R3,R4,R5 : 0258

	D6	7E	04	AC	7D	00002	MOVQ	BYTES -(SP)	: 0263
		AF			02	FB	00006	CALLS #2 LIB_GET_MEM	
		0F			50	E9	0000A	BLBC STATUS-1\$	
04	AC	00		08	BC	D0	0000D	MOVL @RETADR, R0	: 0264
					00	2C	00011	MOVCS #0, (SP), #0, BYTES, (R0)	
					60		00017		: 0265
					50	01	D0	00018	MOVL #1, R0
						04	0001B	1\$: RET	: 0266

: Routine Size: 28 bytes, Routine Base: \$CODE\$ + 0020

CLL
CLL

87 0267 1 GLOBAL ROUTINE find_list_width (fab, listingwidth) =
88 0268 2 BEGIN
89 0269 2 : Determine the width of the listing line
90 0270 2 : FAB is the fab of the open file, width returned in listingwidth.
91 0271 2 :
92 0272 2 :
93 0273 2 MAP
94 0274 2 fab : REF BBLOCK;
95 0275 2
96 0276 2 BIND
97 0277 2 namblk = .fab [fab\$l_nam] : BBLOCK; !NAM block
98 0278 2
99 0279 2 LOCAL
100 0280 2 devnamdesc : BBLOCK [dsc\$c_s_bln],
101 0281 2 devnambuf : VECTOR [nam\$c_maxrss, BYTE],
102 0282 2 devnambufdesc : BBLOCK [dsc\$c_s_bln],
103 0283 2 devinfobuf : BBLOCK [dib\$k_length],
104 0284 2 devinfodesc : BBLOCK [dsc\$c_s_bln],
105 0285 2 devchan;
106 0286 2
107 0287 2 LITERAL
108 0288 2 ch_escape = %X '1B'; !ASCII <ESC>
109 0289 2 listingwidth = 80; !Assume default of 80
110 0290 2 IF (.fab [fab\$l_dev] AND dev\$m_spl) NEQ 0 !If device is spooled
111 0291 3 THEN BEGIN
112 0292 3 devnamdesc [dsc\$w_length] = CH\$FIND_CH (.namblk [nam\$b_esl],
113 0293 3 .namblk [nam\$l_esl], %ASCII ':')
114 0294 3 - .namblk [nam\$l_esl];
115 0295 3 devnamdesc [dsc\$a_pointer] = .namblk [nam\$l_esa];
116 0296 3 END
117 0297 3 ELSE BEGIN !Device is not spooled
118 0298 3 devnamdesc [dsc\$w_length] = CH\$FIND_CH (.namblk [nam\$b_rsl],
119 0299 3 .namblk [nam\$l_rsl], %ASCII ':')
120 0300 3 - .namblk [nam\$l_rsl];
121 0301 3 devnamdesc [dsc\$a_pointer] = .namblk [nam\$l_esa];
122 0302 2 END;
123 0303 2 devnambufdesc [dsc\$w_length] = nam\$c_maxrss;
124 0304 2 devnambufdesc [dsc\$a_pointer] = devnambuf;
125 0305 2 STRNLOG (LOGNAM = devnamdesc, RSLLEN = devnambufdesc, RSLBUF = devnambufdesc);
126 0306 2 IF devnambuf [0] EQL ch_escape !Check for process permanent file
127 0307 3 THEN BEGIN
128 0308 3 devnambufdesc [dsc\$w_length] = .devnambufdesc [dsc\$w_length] - 4;
129 0309 3 devnambufdesc [dsc\$a_pointer] = .devnambufdesc [dsc\$a_pointer] + 4;
130 0310 2 END;
131 0311 2 :
132 0312 2 : Assign the device and then do a \$GETCHN to get the width
133 0313 2 :
134 0314 3 IF \$ASSIGN (DEVNAM = devnambufdesc, CHAN = devchan)
135 0315 3 THEN BEGIN
136 0316 3 devinfodesc [dsc\$w_length] = dib\$k_length; !Set up descriptor for \$GETCHN
137 0317 3 devinfodesc [dsc\$a_pointer] = devinfobuf;
138 0318 4 IF \$GETCHN (CHAN = .devchan, SCDBUF = devinfodesc)
139 0319 3 THEN listingwidth = .devinfobuf [dib\$w_devbufsiz];
140 0320 3 \$DASSGN (CHAN = .devchan); !Deassign channel
141 0321 2 END;
142 0322 2 RETURN true;
143 0323 1 END; !Of find_list_width

						.EXTRN	SYSS\$TRNLOG, SYSS\$ASSIGN	
						.EXTRN	SYSS\$GETCHN, SYSS\$DASSGN	
						.ENTRY	FIND LIST_WIDTH, Save R2	: 0267
						MOVAB	-4007SP), SP	: 0277
						MOVL	FAB, R0	: 0289
						MOVL	40(R0), R2	: 0290
						MOVZBL	#80, @LISTINGWIDTH	: 0292
						BBC	#6, 64(R0), 2\$	
						MOVZBL	11(R2), R0	
						LOCC	#58, R0, @12(R2)	
						BNEQ	1\$	
						CLRL	R1	
						SUBW3	12(R2), R1, DEVNAMDESC	: 0294
						BRB	4\$: 0295
						MOVZBL	3(R2), R0	: 0298
						LOCC	#58, R0, @4(R2)	
						BNEQ	3\$	
						CLRL	R1	
						SUBW3	4(R2), R1, DEVNAMDESC	: 0300
						MOVL	12(R2), DEVNAMDESC+4	: 0301
						MOVZBW	#255, DEVNAMBUFDESC	: 0303
						MOVAB	DEVNAMBUF, DEVNAMBUFDESC+4	: 0304
						CLRQ	-(SP)	: 0305
						CLRL	-(SP)	
						PUSHAB	DEVNAMBUFDESC	
						PUSHAB	DEVNAMBUFDESC	
						PUSHAB	DEVNAMDESC	
						CALLS	#6, SYSS\$TRNLOG	
						CMPB	DEVNAMBUF, #27	: 0306
						BNEQ	5\$	
						SUBW2	#4, DEVNAMBUFDESC	: 0308
						ADDL2	#4, DEVNAMBUFDESC+4	: 0309
						CLRQ	-(SP)	: 0314
						PUSHAB	DEVCHAN	
						PUSHAB	DEVNAMBUFDESC	
						CALLS	#4, SYSS\$ASSIGN	
						BLBC	R0, 7\$	
						MOVZBW	#116, DEVINFODESC	: 0316
						MOVAB	DEVINFOBUF, DEVINFODESC+4	: 0317
						PUSHAB	DEVINFODESC	: 0318
						CLRQ	-(SP)	
						CLRL	-(SP)	
						PUSHL	DEVCHAN	
						CALLS	#5, SYSS\$GETCHN	
						BLBC	R0, 6\$	
						MOVZWL	DEVINFOBUF+6, @LISTINGWIDTH	: 0319
						PUSHL	DEVCHAN	: 0320
						CALLS	#1, SYSS\$DASSGN	
						MOVL	#1, R0	: 0322
						RET		: 0323

; Routine Size: 189 bytes, Routine Base: \$CODE\$ + 003C

LIB SUBS
V04=000

M 7
16-Sep-1984 02:04:43
14-Sep-1984 12:38.11 VAX-11 Bliss-32 V4.0-742
DISK\$VMSMASTER:[LIBRAR.SRC]SUBS.B32;1 Page 7
(4)

-\\$

PSI

--

-L

-L

-L

-O

-S

```

145      0324 1 GLOBAL ROUTINE getfilnamdesc (fab, filedesc) =
146      2 BEGIN
147      2 !++
148      2 ! FUNCTIONAL DESCRIPTION:
149      2
150      2 ! This routine returns a string descriptor for a file.
151      2
152      2 ! Inputs:
153      2
154      2 !     fab          Address of the fab
155      2     filedesc    Address of string descriptor to store into
156      2
157      2 ! Outputs:
158      2
159      2 !     filedesc is filled in. The strings tried are:
160      2
161      2 !         1) resultant name string
162      2 !         2) expanded name string
163      2 !         2) filename string
164      2
165      2 !--
166      2
167      2 ! MAP
168      2     fab : REF BBLOCK,
169      2     fi'desc : REF BBLOCK;
170      2
171      2 ! BIND
172      2     nam = .fab [fab$l_nam] : BBLOCK;
173      2
174      2 ! LOCAL
175      2     nameptr;
176      2
177      2 IF (filedesc [dsc$w_length] = .nam [nam$b_rsl]) NEQ 0 !If resultant name present
178      2 THEN filedesc [dsc$a_pointer] = .nam [nam$l_rsa]
179      2 ELSE IF (filedesc [dsc$w_length] = .nam [nam$b_esl]) NEQ 0 !If expanded name present
180      2 THEN filedesc [dsc$a_pointer] = .nam [nam$l_esal]
181      2 ELSE BEGIN
182      3     filedesc [dsc$w_length] = .fab [fab$b_fns];   !Use filename string
183      3     filedesc [dsc$a_pointer] = .fab [fab$l_fnal]; ! if all else fails
184      2     END;
185      2
186      2 ! Allocate memory and copy the filename to it
187      2
188      2 lib_get_mem (.filedesc [dsc$w_length], nameptr);
189      2 CH$MOVE (.filedesc [dsc$w_length], .filedesc [dsc$a_pointer], .nameptr);
190      2 filedesc [dsc$a_pointer] = .nameptr;
191      2 RETURN true
192      1 END;                                         !Of getfilnamdesc

```

5E 51 50	007C 00000 04 C2 00002 04 AC 7D 00005 28 A1 D0 00009	.ENTRY GETFILNAMDESC, Save R2,R3,R4,R5,R6 SUBL2 #4, SP MOVQ FAB, R1 MOVL 40(R1), R0
----------------	---	--

: 0324

: 0351

	56	04	A2	9E	00000	MOVAB	4(R2), R6	: 0357
	62	03	A0	98	00011	MOVZBW	3(R0), (R2)	: 0356
		06	13	00015	BEQL	1\$	Sy	
	66	04	A0	D0	00017	MOVL	4(R0), (R6)	--
		14	11	0001B	BRB	3\$	ACI	
	62	08	A0	98	0001D 1\$:	MOVZBW	11(R0), (R2)	ACI
		06	13	00021	BEQL	2\$	ACI	
	66	0C	A0	D0	00023	MOVL	12(R0), (R6)	ACI
		08	11	00027	BRB	3\$	ACI	
	62	34	A1	98	00029 2\$:	MOVZBW	52(R1), (R2)	ACI
	66	2C	A1	D0	0002D 3\$:	MOVL	44(R1), (R6)	ACI
		5E	DD	00031	PUSHL	SP	COR	
	00	BE	FECC	7E	62 3C 00033	MOVZWL	(R2), -(SP)	COR
		00	CF	02	FB 00036	CALLS	#2, LIB GET MEM	COR
		B6		62	28 0003B	MOVC3	(R2), @0(R6), @NAMEPTR	COR
		66		6E	D0 00041	MOVL	NAMEPTR, (R6)	COR
		50		01	D0 00044	MOVL	#1, R0	COR
				04	00047	RET	EXI	

: Routine Size: 72 bytes, Routine Base: \$CODE\$ + 00F9

: 193 0372 1 END
: 194 0373 0 ELUDOM

PSECT SUMMARY

Name	Bytes	Attributes
\$CODE\$	321	NOVEC,NOWRT, RD , EXE,NOSHR, LCL, REL, CON,NOPIC,ALIGN(2)

Library Statistics

File	-----	Symbols	-----	Pages	Processing
	Total	Loaded	Percent	Mapped	Time
_S255\$DUA28:[SYSLIB]STARLET.L32;1	9776	37	0	581	00:01.0

COMMAND QUALIFIERS

: BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS\$:\$SUBS/OBJ=OBJ\$:\$SUBS MSRC\$:\$SUBS/UPDATE=(ENH\$:\$SUBS)

: Size: 321 code + 0 data bytes

LIB SUBS
V04=000

C 8
16-Sep-1984 02:04:43 VAX-11 Bliss-32 v4.0-742

Page 10

: Run Time: 00:08.7
: Elapsed Time: 00:18.3
: Lines/CPU Min: 2566
: Lexemes/CPU-Min: 28176
: Memory Used: 86 pages
: Compilation Complete

0202 AH-BT13A-SE
VAX/VMS V4.0

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